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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/508,958	12/12/2005	Yoshinori Naoe	259908US0XPCT	7546
22850 7590 10/02/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER CARTER, KINDRA D				
ART UNIT		PAPER NUMBER		
1617				
NOTIFICATION DATE		DELIVERY MODE		
10/02/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/508,958

Applicant(s)

NAOE ET AL.

Examiner

KENDRA D. CARTER

Art Unit

1617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 April 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-11 and 16-20 is/are pending in the application.
4a) Of the above claim(s) 8-11 and 16-20 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5 and 7 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date 4/30/08
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 30, 2008 has been entered.

The Examiner acknowledges the applicant's remarks and arguments of April 30, 2008 made to the office action filed November 30, 2007. Claims 1-5, 7-11 and 16-20 are pending. Claim 6 is cancelled and claim 4 is amended.

In light of the cancellation of claims 12-15, the 35 U.S.C. 101 and 112, second paragraph are withdrawn.

The provisional obviousness-type double patenting rejections over U.S. Patent Application No. 11/064,292, 10/948,288 and 10/486,833 are maintained being that terminal disclaimers have not as-yet been filed.

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The Applicant's arguments of the 35 U.S.C. 103(a) rejection of claims 1-5, 12 and 13 as being unpatentable over Nakajima et al. (Experimental cell research, 1998, 24, pages 126-133) in view of Georges et al (US 2002/0065282 A1) were found not persuasive, and thus the rejection is upheld. In light of the amendment to claim 4 a new rejection is made.

The Applicant's arguments of the 35 U.S.C. 103(a) rejection of claims 6, 7, 14 and 15 as being unpatentable over Nakajima et al. (Experimental cell research, 1998, 24, pages 126-133) in view of Georges et al (US 2002/0065282 A1) as applied to claims 1-5, 12 and 13 above in view of Ueda et al. (The Journal of Antibiotics, 1994, vol. 43(3), page 301-310) were found persuasive not, and thus the rejection is upheld.

Due to the cancellation of claim 6 and amendment to claim 4, the modified provisional obviousness double patenting and new 35 U.S.C. 103(a) rejections are made below. The Applicant's arguments are addressed below.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct

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from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

(1) Claims 1-5 and 7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 and 9 of copending Application No. 11/064,292 ('292). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The application '292 teaches a method of treating a tumor patient comprising administering to a patient the compound of formula (I) (see claims 1, 2 and 9) or FK 228 (i.e. the stereoisomer of formula (I); current applications compound of formula (II); see claim 3). For clarification, the specification discloses that a patient is a human and administration intravenously (i.e. *in vivo*; see page 17, lines 15-20).

The application '292 does not specifically disclose the suppression of a cancerous tumor in the kidney.

To one of ordinary skill in the art at the time of the invention would have found it obvious to combine the application '292 and the suppression of a cancerous tumor in the kidney because kidney cancer is treated by the application '292.

(2) Claims 1-5 and 7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 60-62, 69 and 70 of copending Application No. 10/948,288 ('288). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The application '288 teaches a method of treating cancer or a tumor of the kidney comprising administering to a subject in need an effective amount of the compound of formula (I) (see claims 60-62 and 69) or FK 228 (i.e. the stereoisomer of formula (I); current applications compound of formula (II); see claim 70). The method is administered orally, parenterally, intranasally, pulmonarily, vaginally, or transrectally (i.e.

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in vivo; see claims 75-77). For clarification, the specification discloses that a subject is a human (see page 16, lines 31-34 to page 17, line 1).

The application '288 does not specifically disclose the suppression of a cancerous tumor in the kidney.

To one of ordinary skill in the art at the time of the invention would have found it obvious to combine the application '288 and the suppression of a cancerous tumor in the kidney because kidney cancer is treated by the application '288.

(3) Claims 1-5 and 7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 45 and 60 of copending Application No. 10/486,833 ('833) in view of Georges et al (US 2002/0065282 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The application '833 teaches a method of treating prostate cancer comprising administering an effective amount of the compound of formula (I) (see claim 45) or a compound of formula (II) (see claim 60). For clarification, the specification discloses

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that the method is administered to a human intravenously, intramuscularly or orally (see page 11, lines 16 and 17).

The application '833 does not a treatment for kidney cancer or the suppression of a cancerous tumor in the kidney.

Georges et al. teaches a method of treating the proliferation of malignant cell and cancer of the prostate as well as solid tumors of the kidney with a histone deacetylase inhibitor (see page 3, paragraph 36, lines 8-10, 18 and 19).

To one of ordinary skill in the art at the time of the invention would have found it obvious to combine the application '833 and the treatment of kidney cancer because Georges et al. teaches that histone deacetylase inhibitors treats prostate and kidney cancer. Since the applicant's compound is a histone deacetylase inhibitor, then by the same mechanism, the compound will also treat kidney cancer and suppress cancerous tumors in the kidney.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(1) Claims 1-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. (Experimental cell research, 1998, 24, pages 126-133) in view of Georges et al (US 2002/0065282 A1) in further view of Ueda et al. (The Journal of Antibiotics, 1994, vol. 43(3), page 301-310).

Nakajima et al. teaches the compound of formula I and II as an inhibitor of intracellular histone deacetylase activity (see title, abstract, lines 15 and 16, and page 127, figure 1) that strongly inhibits proliferation of tumor cells *in vitro* and greatly suppresses the growth of transplanted tumors in mice (see page 126, column 2, last 4 lines; addresses claims 1-5).

Nakajima et al. does not teach a treatment for kidney cancer or the suppression of a cancerous tumor in the kidney. Nakajima et al. also does not specifically teach the applicant's compound *in vivo* or in a human.

Georges et al. teaches a method of treating the proliferation of malignant cell and cancer of the breast, lung, colon, rectum, stomach, prostate, bladder, pancreas, ovary as well as solid tumors of the kidney, liver, prostate and pancreas with a histone deacetylase inhibitor (see page 3, paragraph 36, lines 8-10, 18 and 19).

Ueda et al. teaches the applicants compound of formula I and II as anti-tumor agents against human tumor cell lines both in vitro and in vivo (see page abstract lines 1, 4 and 5, and page 302, figure 2).

To one of ordinary skill in the art at the time of the invention would have found it obvious to combine Nakajima et al. and the treatment of kidney cancer because Georges et al. teaches that histone deacetylase inhibitors treats prostate and kidney cancer. Since the applicant's compound is a histone deacetylase inhibitor, then by the same mechanism, the compound will also treat kidney cancer and suppress cancerous tumors in the kidney. Additionally, without unexpected results, one skilled in the art would reasonably expect that an anti-tumor drug would treat a tumor in the kidney.

To one of ordinary skill in the art at the time of the invention would have found it obvious and motivated to combine Nakajima et al. and suppressing the growth of cancerous tumors of the kidney *in vivo* in a human because Ueda et al. teaches the

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applicant's compounds as anti-tumor agents against human tumor cell lines both in vitro and in vivo (see page abstract lines 1, 4 and 5, and page 302, figure 2).

Response to Arguments

Applicant's arguments filed April 30, 2008 have been fully considered but they are not persuasive.

35 U.S.C. 103(a) as being unpatentable over Nakajima et al. in view of Georges et al.

The Applicant argues that there is no reasonable nexus or evidence provided by Georges et al or the Examiner to show that the artisan would have a reasonable basis to expect that any HDAC inhibitor, including those disclosed in Georges et al. as well as FK228, would be effective for treating any form of cancer from those recited. Thus, the statement in Georges et al. can amount to nothing more than a wish or a hope, which at best offers an invitation to experiment. However, "obvious to try" has long been held not to constitute obviousness. *In re O'Farrell*, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988). A general incentive (i.e. "a desire to enhance the production of 2'deoxyribonucleosides") does not make obvious a particular result, nor does the existence of techniques by which those efforts can be carried out. *In re Deuel*, 34 USPQ2d 1210, 1216 (Fed. Cir. 1995). Additionally, there is no direct expectation of *in vivo* efficacy from the *in vitro* observation of HDAC inhibitory activity. The lack of expectation of success is clearly manifest in the combined disclosures of Nakajima et al. and Georges et al.

The Examiner disagrees because the combined teachings of Nakajima et al. and Georges et al. suggest the limitations of the claims. Particularly, the use of the HDAC inhibitors of Georges et al. expected use for the treatment of kidney cancers (see page

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3, paragraph 36) is enough for a skilled practitioner to obviously try other HDAC inhibitors. The expectation of success is that a mechanism of action has been established between HDAC inhibitors and several cancers. Thus, although the structures of inhibitors may be different, the compounds have the same mechanism of action. In regards to expectation of success for *in vivo* efficacy based on *in vivo* data, the prior art demonstrates that *in vitro* data does related to efficacy of kidney tumors *in vivo*, as taught by Ueda et al.

35 U.S.C. 103(a) as being unpatentable over Nakajima et al. in view of Georges et al. in further view of Ueda et al.

Applicant argues that cell lines used in the *in vitro* study of Ueda et al. are human lung and mammary adenocarcinoma. Additionally the cells were transplanted under the kidney capsule of the BDF1 mice. Thus, none of these experiments provide any suggestion to treat kidney cancer or any expectation of the efficacy when so doing. Just because a breast cancer cell is grown on the kidney does not instantly make it "kidney cancer". Therefore, it will be understood that the SRC Assay of Ueda et al. is a sensitivity test for rapid evaluation of a clinical affect of an anticancer drug for various tumors. The tests performed in the present invention are not SRC Assays but an ordinary subcutaneous implantation assay for evaluation of *in vivo* renal tumor growth inhibitory activity. Therefore, this test clearly indicates that the compound of the present invention suppresses growth of a cancerous tumor of the kidney *in vivo*.

The Examiner disagrees because *in vivo* treatment of kidney cancer is obvious because of the following reasons: 1) George et al. has demonstrated treating the proliferation of malignant cells with HDAC inhibitors (see page 3, paragraph 36); 2) Nakajima et al. teaches that the applicant's compounds are HDAC inhibitors; and 3)

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Ueda et al. teaches that the applicant's compounds are anti-tumor agents against human tumor cell lines both *in vitro* and *in vivo* (see page abstract lines 1, 4 and 5, and page 302, figure 2). Thus, one skilled in the art would not have reasonable expectation that the applicant's compounds can be administered to humans to treat cancer. Since George et al. teaches that HDAC inhibitors are expected to treat kidney cancer, one of ordinary skill in the art would have motivation to try HDAC inhibitors to treat cancer since it is already effective in treating the proliferation of malignant cells and other cancers.

Obvious Double Patenting Rejections

The Applicant argues that terminal disclaimer will be filed if necessary. Further, the claims of the cited co-pending applications do not render the claimed invention obvious. First, 11/064,292 claims do not specifically relate to the suppression of a cancerous tumor in the kidney. Second, claims 45 and 60 of 10/486,833 are related to a method of treating prostate cancer, not kidney cancer. Third, the claims of US 10/948,288 require a synergistic formulation of a histone deacetylase inhibitor and doxorubicin, and do not remotely suggest the effect on kidney cancer of the compounds of formula 1 or 2 in the absence of doxorubicin.

The Examiner disagrees because the application 11/064,292 is directed toward a method of treating a tumor patient with the same compound as the instant invention. Although a taxane anti-tumor agent is also used, one skilled in the art would render the instant invention obvious, because taxane agents are known to treat tumors. Additionally, one of ordinary skill in the art at the time of the invention would have found

it obvious to combine the application '292 and the suppression of a cancerous tumor in the kidney because kidney cancer is treated by the application '292 (see claim 9).

In regards to application 10/486,833 ('833), although '833 does not teach the treatment of kidney cancer with the claimed compound, Georges et al. provides the teaching that histone deacetylase inhibitors treats prostate and kidney cancer. Therefore, since the applicant's compound is a histone deacetylase inhibitor, then by the same mechanism, the compound will also treat kidney cancer and suppress cancerous tumors in the kidney.

In regards to application 10/948,288 ('288), one of ordinary skill in the art at the time of the invention would have found it obvious to combine the application '288 and the suppression of a cancerous tumor in the kidney because kidney cancer is treated by the application '288 (see claim 62). Additionally, synergy does not mean that the histone deacetylase inhibitor compound claimed does not work by itself without doxorubicin, which is evidenced in the specification on page 20, lines 27-33. Therefore, it would be obvious to treat kidney tumors with the claimed histone deacetylase inhibitor compound alone.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KENDRA D. CARTER whose telephone number is (571)272-9034. The examiner can normally be reached on 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan can be reached on (571) 272-0629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kendra D Carter/
Examiner, Art Unit 1617

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Supervisory Patent Examiner, Art Unit 1617